

 terminal for a cancel audio signal supplied to the signal acoustic transducing element.

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REMARKS

Claims 1, 3-11, and 13-15 remain in the application with claims 1, 3-5, 7-11, and 13 having been amended hereby and claims 2 and 12 having been cancelled, without prejudice or disclaimer.

Reconsideration is respectfully requested of the rejection of claims 1, 3, 5, and 9-12 under 35 USC 102(b), as being anticipated by Andrea et al.

The present invention is intended to provide a noise canceling system for use with headphones in which separate microphones are provided in the headphones and an individual, stand-alone control circuit section is detachably connected to the headphone section. The control section also includes a recording/playback device in which sounds detected by the microphone can be recorded. In a further embodiment of the present invention, the control circuit section is combined with a remote controller that is operated to control a stand-alone recording/playback device. The headphone section is plugged into the remote controller, which in turn is plugged into the

recording/playback device.

Also provided is a manually adjustable control mounted on the headphone section that permits the user to control the amount of noise cancellation being provided.

Andrea et al. relates to an adaptive noise cancellation system for use in an intercommunication system having a headphone device. The headphones include a sensor or a microphone and a separate unit is provided for the electronics used to provide the noise cancellation.

Claims 1, 5, and 9-11 have been amended hereby to recite a recording device whereby the audio signal detected by the microphone can be recorded. Andrea et al. is completely silent concerning any such recording device and, thus, Andrea et al. fails to anticipate the present invention, as recited in amended claims 1, 3, 5, and 9-11.

Reconsideration is respectfully requested of the rejection of claims 13-15 under 35 USC 102(e), as being anticipated by Todter et al.

A feature of the present invention is the capability to control the amount of noise cancellation being provided and such capability being provided by the so-called semi-fixed resistor in the adjusting mechanism 16L or 16R. As noted in the specification, the user has the ability to control this by

rotating the adjusting element 40, as shown in Fig. 7.

Todter et al. relates to a noise canceling system in which the noise cancellation is done with adaptive control with a feedback and feedforward system. Todter et al. does not suggest permitting the user to control the extent of noise cancellation provided.

Therefore, it is respectfully submitted that Todter et al. does not anticipate the present invention, as recited in amended claims 13-15.

The cancellation of claim 2 renders moot the rejection thereof under 35 USC 103, as being unpatentable over Kameo.

Nevertheless, it is respectfully submitted that, although Kameo discloses the provision of microphones on a headphone with a headphone output jack then being able to be plugged into a recording input jack of an electric appliance, with neither the jack nor the appliance being shown Kameo does not suggest the provision of any recording/playback device section being included in a noise cancellation section. Furthermore, Kameo does not suggest noise cancellation at all.

Therefore, combining Kameo with a noise cancellation system would not have been obvious absent the present invention, and, particularly, in the absence of any discussion in any reference

concerning the benefits to be had by providing a recording system in the noise cancellation section.

Reconsideration is respectfully requested of the rejection of claim 4 under 35 USC 103, as being unpatentable over Andrea et al. in view of Sasaki.

Claim 4 depends from claim 1, which for the reasons set forth hereinabove, is thought to be patentably distinct over the cited reference and for at least those very same reasons claim 4 is also submitted to be patentably distinct thereover.

Moreover, it is respectfully submitted that Sasaki fails to show or suggest a remote controller, as recited in claim 4. The system of Sasaki is intended to be a hands-free telephone type system and the elements shown at 40 in Fig. 1 consist of a microphone, an amplifier, and a transmission circuit. This circuit is intended to provide feedback for the noise cancellation system. The remote controller of the present invention provides remote control of the recording/playback device, a feature positively recited in the amended claims but not shown or suggested in Sasaki or Andrea et al.

Reconsideration is respectfully requested of the rejection of claims 6-8 under 35 USC 103, as being unpatentable over Andrea et al. in view of Trompler et al.

Claims 6-8 depend from claim 5, which for the reasons set

forth hereinabove is thought to be patentably distinct over the cited reference and, for at least those very same reasons, claims 6-8 are also submitted to be patentably distinct thereover.

Accordingly, by reason of the amendments made to the claims hereby, as well as the above-remarks, it is respectfully submitted that a noise cancellation system for use with a headphone section in which a recording/playback device is provided in one embodiment in the actual control circuit section and in another embodiment is provided separate and apart from the control circuit section, which itself is provided in a remote controller, as taught by the present invention and as recited in the amended claims, is neither shown nor suggested in the cited references, alone or in combination.

The reference cited as of interest has been reviewed and is not seen to show or suggest the present invention as recited in the amended claims.

Favorable reconsideration is earnestly solicited.

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Respectfully submitted,

COOPER & DUNHAM LLP

A handwritten signature in cursive script, reading "Jay H. Maioli".

Jay H. Maioli

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VERSION WITH MARKINGS TO SHOW CHANGES MADE  
IN THE CLAIMS

Please amend claims 1, 3-5, 7-11, and 13 by rewriting same to read as follows and cancel claims 2 and 12, without prejudice or disclaimer.

--1. (Amended) An acoustic apparatus comprising:

a headphone section mounted on a user head, having a microphone element for detecting sound around the user and a signal acoustic transducing element functioning as a sound source for canceling the sound around the user, housed in a headphone box, with a first output terminal for outputting a microphone audio signal collected by the microphone element and a first input terminal for inputting a cancel audio signal supplied to the signal acoustic transducing element; and

a control circuit section independent from the headphone section[, with] having a second input terminal connected to the first output terminal and a second output terminal connected to the first input terminal[, and] for controlling at least frequency characteristics and gain characteristics of the microphone audio signal from the microphone element of the headphone section input through the second input terminal, [to generate] for generating the cancel audio signal for canceling

the sound around the user, and for supplying the cancel audio signal to the signal acoustic transducing element of the headphone section through the second output terminal, said control circuit section including recording means for recording the microphone audio signal output from the microphone element.

--3. (Twice Amended) The acoustic apparatus according to claim 1, wherein the control circuit section further comprises:

means for adding different audio signals to the cancel audio signal using a signal audio converter element [as a sound source for canceling the sound around the user].

--4. (Twice Amended) The acoustic apparatus according to claim 1, wherein the control circuit section further comprises:

means for adding different audio signals to the cancel audio signal using a signal audio converter element as a sound source [for canceling the sound around the user]; and

a remote control configured to supply remote-control signals for remotely controlling output of the different audio signals [from an output device of the different audio signals].

--5. (Twice Amended) An acoustic apparatus comprising:



a headphone section mounted on a user head, having a microphone element for detecting sound around the user and a signal acoustic transducing element functioning as a sound source for canceling the sound around the user, housed in a headphone box, with a first output terminal with an adjusting section for adjusting an output of a microphone audio signal collected by the microphone element and a first input terminal for inputting a cancel audio signal supplied to the signal acoustic transducing element, and

a control circuit section arranged in a housing independent from the headphone section[, with] and having a second input terminal connected to the first output terminal and a second output terminal connected to the first input terminal[, and] for controlling at least frequency characteristics and gain characteristics of the microphone audio signal from the microphone element of the headphone section input through the second input terminal, [to generate] for generating the cancel audio signal that can serve as a sound source for canceling the sound around the user, and for supplying the cancel audio signal to the signal acoustic transducing element of the headphone section through the second output terminal, said housing also

having arranged therein recording means for recording the microphone audio signal from the microphone element.

--7. (Twice Amended) The acoustic apparatus according to claim 5, wherein an amplifier section for [cancel audio] generating signals serving as a sound source for canceling the sound around the user and adjusting means for adjusting an output level of the amplifier section are provided in the headphone box, and gains of the cancel audio signal input to the signal acoustic transducing element are controlled.

--8. (Twice Amended) The acoustic apparatus according to claim 5, wherein an adjusting section adjusts the microphone audio signal from the microphone element that serves as a sound source for canceling the sound around the user and adjusts the microphone audio signal from the microphone element in the headphone box,

said adjusting means having operating means [which] operable by the user [is able to operate] from [the] outside the headphone box, and

an amplifier section for amplifying the microphone audio signal adjusted at the adjusting section.

--9. (Twice Amended) An acoustic apparatus comprising:

a recording/playback device;

a headphone section mounted on a user head, having a microphone element for detecting sound around the user and a signal acoustic transducing element functioning as a sound source for canceling the sound around the user, housed in a headphone box, with a first output terminal for outputting a microphone audio signal collected by the microphone element and a first input terminal for inputting a cancel audio signal supplied to the signal acoustic transducing element; and

a [control circuit section] remote control connected to said recording/playback device for controlling operation of said recording/playback device and feeding the microphone audio signal to the recording/playback device, said remote controller being independent from the headphone section[, with] and including a control section having a second input terminal connected to the first output terminal and a second output terminal connected to the first input terminal[, and] for controlling at least frequency characteristics and gain characteristics of the microphone audio signal from the microphone element of the headphone section input through the second input terminal, with said frequency characteristics and gain characteristics being

adjusted to achieve a predetermined level at a predetermined frequency between 50 Hz and 1.5 kHz, [to generate] for generating the cancel audio signal that can cancel the sound around the user, and for supplying the cancel audio signal to the signal acoustic transducing element of the headphone section through the second output terminal.

--10. (Twice Amended) An acoustic apparatus comprising:

a headphone section mounted on a user head, having a microphone element for detecting sound around the user and a signal acoustic transducing element functioning as a sound source for canceling the sound around the user, housed in a headphone box, with a first output terminal for outputting a microphone audio signal collected by the microphone element and a first input terminal for inputting a cancel audio signal supplied to the signal acoustic transducing element;

a control circuit section [independent] arranged in a housing separate from the headphone section[, equipped with] a second input terminal connected to the first output terminal and a second output terminal connected to the first input terminal[, and] for controlling at least frequency characteristics and gain characteristics of the microphone audio signal from the microphone element of the headphone section input through the

second input terminal, [to generate] for generating the cancel audio signal for canceling the sound around the user, and for supplying the cancel audio signal to the signal acoustic transducing element of the headphone section through the second output terminal, and a recording/playback device arranged in the housing for recording the microphone audio signal from the microphone element; and

a circuit configuration for canceling the surrounding sound used by the control circuit section that is of a feed-forward system.

--11. (Twice Amended) An acoustic apparatus comprising:

a recording/playback device;

a headphone section mounted on a user head, having a microphone element for detecting sound around the user and a signal acoustic transducing element functioning as a sound source for canceling the sound around the user, housed in a headphone box, with a first output terminal for outputting a microphone audio signal collected by the microphone element and a first input terminal for inputting a cancel audio signal supplied to the signal acoustic transducing element;

a [control circuit section] remote controller connected  
to said recording/playback device for controlling operation of  
said recording/playback device and feeding the microphone audio  
signal to the recording/playback device, said remote  
controller being independent from the headphone section[,  
with] and including a control circuit section having a second  
input terminal connected to the first output terminal and a  
second output terminal connected to the first input terminal[,  
and] for controlling at least frequency characteristics and  
gain characteristics of the microphone audio signal from the  
microphone element of the headphone section input through the  
second input terminal, [to generate] for generating the cancel  
audio signal for canceling the sound around the user, and for  
supplying the cancel audio signal to the signal acoustic  
transducing element of the headphone section through the  
second terminal; and

a circuit configuration for canceling the sound  
surrounding the user used by the control circuit section that  
is of a feedback system.

--13. (Twice Amended) A headphone comprising:

a box for housing a microphone element for detecting  
sound around a user, a signal acoustic transducing element  
functioning as a sound source for canceling the sound around  
the user, and an adjusting section including an adjusting

element manually operable by the user for adjusting a cancel amount of the sound around the user; and

an output terminal for a microphone audio signal whose sound is collected by the microphone element, and an input terminal for a cancel audio signal supplied to the signal acoustic transducing element.